Commonwealth of Kentucky
Division for Air Quality

PERMIT STATEMENT OF BASIS

Conditional Major/ Synthetic Minor/Renewal Permit #: F-05-004
Schwan's Global Supply Chain, Inc, Florence, Kentucky
August 30, 2005
George H. Day, Reviewer
Source ID #: 21-015-00120
Source AI #: 241
Activity #: APE20050001

SOURCE DESCRIPTION:

Schwan's Global Supply Chain, Inc. is a frozen pizza manufacturer located in Florence, KY. The facility is currently operating under a Federally-Enforceable Conditional Major/Synthetic Minor Operating Permit (F-00-010, Revision II), that was issued on August 11, 2000, revised on October 15, 2004, and is due to expire August 11, 2005. In June of 2005 prior to the renewal permit being issued, the company began to inquire about installation of a second process oven. A complete application was acknowledged on June 19,2005 for a minor permit revision, with the source remaining under the same processing limits as the previous permit. This permit revision will contain federal enforceable conditions for the operation of a new catalytic afterburner to reduce VOC emissions and to increase production.

Concerning the previous permit, F-00-010 (Revision II), on August 20, 2004, the facility submitted an application to the Division for Air Quality proposing a minor permit revision to accommodate the addition of a 18 mmBtu/hr direct-fired natural gas water heater (EU04). The new water heater will operate in place of a 12.5 mmBtu/hr existing indirect heat exchanger (EU01). The existing indirect heat exchanger will remain at the site; however, it will only be operated as a back-up in the event that the new unit fails. Since the current indirect heat exchanger will remain on the site, its emissions are still included in the facility's potential to emit (PTE).

The 18 mmBtu/hr water heater is a direct contact non-pressurized unit. The water heater is divided into four (4) zones, which consist of: the spray distribution zone, the heat transfer zone, the combustion zone, and the temporary storage zone. In the first zone, water enters the heater under a pressure of 10-30 Psi, then is distributed evenly through a wide-angle spray-nozzle over the water heater cross-section, where the water pressure reduces to atmospheric pressure. The next zone is composed of steel packing rings, which allows the water to trickle over and through these rings and into contact with the product of combustion gases that are blown upward through the rings. This is done to reduce the exhaust temperature to near ambient conditions, which eliminates the loss of stack heat. In the combustion zone, water passes through and comes in direct contact with the gases of the combustion product. After passing through this zone, the water settles into the temporary storage zone and is later discharged. It should be noted that "Indirect heat exchanger means any piece of equipment, apparatus or contrivance used for the combustion of fuel in which the energy produced is transferred to its point of usage through a medium that does not come in contact with or add to the products of combustion." Since water passes through and comes in direct contact with the gases of the combustion product in the combustion zone of the unit, the unit is not considered an indirect heat exchanger, but a direct-fired process water heater.

COMMENTS: APPLICABLE REGULATIONS

401 KAR 59:010 New process operations applicable to emission units commenced on or after July 2, 1975.

401 KAR 59:015 New Indirect Heat Exchanger, applicable to an emission unit with a capacity of 250 mmBtu/hr input or less that commenced on or after April 9, 1972.

401 KAR 60:005 incorporating by reference 40 CFR 60, Subpart Dc, Standards of Performance for small industrial-commercial-institutional steam generating units, applies to each steam generating unit commenced after June 9, 1989 that has a maximum design heat input capacity between 10mmBtu/hr and 100mmBtu/hr.

EMISSIONS UNIT –01

Pursuant to 401 KAR 59:015, Section 4(1)(c), particulate emissions shall not exceed 0.484 lb/mmBtu based on a three-hour-average.

Pursuant to 401 KAR 59:015, Section 5(1)(c), the sulfur dioxide emissions shall not exceed 2.33 lb/mmBtu based on a twenty-four-hour average.

Pursuant to 401 KAR 59:015, Section 4(2), emissions shall not exceed 20% opacity based on a six minute average, except that a maximum of 40% opacity based on a six minute average, shall be permissible for not more than 6 consecutive minutes in any consecutive 60 minutes during cleaning the fire-box or blowing soot.

While burning natural gas, this unit is considered to be in compliance with PM, SO_2 and opacity standard. The permittee shall monitor and record the amount of wood material combusted from each wood boiler on a monthly basis.

The permittee shall monitor the natural gas usage rates on a daily basis, and records the amount of natural gas burned shall be maintained on a daily basis.

EMISSION UNITS -02, 03 & 05

The permittee shall monitor amounts of all pizza dough produced. The permittee shall calculate and record the monthly VOC emissions. The VOC emissions from the operation of the oven shall be determined based on emission factors derived from the equation given in "Alternate Control Technology Document for Bakery Oven Emissions" (EPA 453/R-92-017, December 1992)

$$\text{VOC E.F.} = 0.95Y_i+0.195t_1-0.51S-0.86t_s+1.90$$

Where,

VOC E.F.	=	Emission factor in pounds of VOC per Ton of dough baked
Y_I	=	Initial baker's percent of yeast to the nearest tenth of a percent
t_I	=	Total yeast action time in hours the nearest tenth of an hour (Fermentation time + Floor time + proof time)
S	=	Final (Spike) baker's percent of yeast to the nearest tenth of a percent
t_s	=	Spiking time in hours to the nearest tenth of an hour (Floor time + Final proof time)

The permittee shall keep monthly records of pizza dough produced. Total actual emissions for VOCs shall be calculated each month (tons per month) based upon the amount pizza dough produced at the facility during that month. The permittee shall also keep records of twelve (12) months rolling total for VOC emissions. These records shall be made available for inspection upon request by any duly authorized representative of the Division for Air Quality.

EMISSION UNIT -04

Pursuant to 401 KAR 59:010, Section 3(1)(a), no person shall cause, suffer, allow, or permit any continuous emission into the open air from a control device or stack associated with any affected facility which is equal to or greater than twenty (20) percent opacity.

Pursuant to 401 KAR 59:010, Section 3(2), particulate emissions shall not exceed the level specified by the following:

E = 3.59*P^(0.62), where
E = rate of emission in pounds per hour (lbs/hr)
P = process rate in tons per hour (tons/hr)

While burning natural gas, this unit is considered to be in compliance with PM and opacity standards.

The permittee shall monitor the natural gas usage rates on a daily basis, and record the amount of natural gas burned shall be maintained on a daily basis.

EMISSIONS AND OPERATING CAP DESCRIPTION:

In accordance with 401 KAR 52:030, Section 1 and to preclude the applicability of 401 KAR 52:020, source wide emissions of volatile organic compounds (VOC(s)) shall not equal or exceed 100 tons/year on a twelve-month rolling total.

The permittee shall limit oven baking production rates of pizza dough, as well as limit the VOC emissions of Emission Units 01, 04 and 05 , in addition to all insignificant activities, so as to ensure that source wide emissions of VOC(s) shall not exceed 95 tons/year on a twelve-month rolling total.

OPERATIONAL FLEXIBILITY:

None

CREDIBLE EVIDENCE:

This permit contains provisions which require that specific test methods, monitoring or recordkeeping be used as a demonstration of compliance with permit limits. On February 24, 1997, the U.S. EPA promulgated revisions to the following federal regulations: 40 CFR Part 51, Sec. 51.212; 40 CFR Part 52, Sec. 52.12; 40 CFR Part 52, Sec. 52.30; 40 CFR Part 60, Sec. 60.11 and 40 CFR Part 61, Sec. 61.12, that allow the use of credible evidence to establish compliance with applicable requirements. At the issuance of this permit, Kentucky has not incorporated these provisions in its air quality regulations.